

ABSTRACT OF THE DISCLOSURE

A structure to generate x-rays has a plurality of stationary and individually electrically addressable field emissive electron sources with a substrate composed of a field emissive material, such as carbon nanotubes. Electrically switching the field emissive electron sources at a predetermined frequency field emits electrons in a programmable sequence toward an incidence point on a target. The generated x-rays correspond in frequency and in position to that of the field emissive electron source. The large-area target and array or matrix of emitters can image objects from different positions and/or angles without moving the object or the structure and can produce a three dimensional image. The x-ray system is suitable for a variety of applications including industrial inspection/quality control, analytical instrumentation, security systems such as airport security inspection systems, and medical imaging, such as computed tomography.

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